

Abstract Submitted  
for the SHOCK05 Meeting of  
The American Physical Society

**DDT Characteristics of Laser Driven Exploding Bridgewire Detonators**<sup>1</sup> ERIC WELLE, KEVIN FLEMING, ROBERT PAHL, Sandia National Laboratories — The initiation and performance characteristics of Laser Exploding Bridgewire (LEBW) detonators loaded with CL-20, CP and BNCP were examined. LEBW devices, in name, as well as in function, exhibit similarities to their electrically driven counterparts with the exception that the means for energy deposition into the driving metal media results from photon absorption instead of electrical joule heating. CP and BNCP were chosen due to their well-known propensity to rapidly undergo a deflagration-to-detonation transition (DDT) and CL-20 was chosen to explore its utility as a DDT explosive. The explosive loading within the LEBW detonators were similar in nature to traditional EBW devices with regard to %TMD loading of the initial increment as well as quantity of energetic materials. Comparisons of the energy fluences required for initiation of the explosives will be discussed. Additionally, streak camera measurements will be reviewed that were conducted at what would be considered “hard-fire” fluence levels as well as conditions closer to the mean firing fluence levels of initiation.

<sup>1</sup>Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company for the United States Department of Energy’s National Nuclear Security Administration under contract DE-AC04-94AL85000.

Eric Welle  
Sandia National Laboratories

Date submitted: 05 Apr 2005

Electronic form version 1.4